

Eaton Type CH Convertible Family



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Overview

Product Selection Guide

CH Loadcenters

Description

Service

Single-phase, three-wire, 120/240 Vac	Three-phase, four-wire, 208Y/120 Vac
Three-phase, three-wire, 240 V corner grounded delta	Three-phase, three-wire, 240 Vac delta

Short-Circuit Current Rating

10 kAIC: All single- and three-phase loadcenters 40–400 A, 2–42 circuits except when series ratings are applied	35 kAIC available on convertible units using CSH main breaker
25 kAIC: All factory-installed main breakers single-phase loadcenters rated 150–225 A using Type CSR main breakers	42 and 100 kAIC are available on some styles: single-phase and three-phase

Main Breaker/Main Lug Loadcenters

Single-phase	Three-phase
Main breaker: 100, 125, 150, 200, 225, 400 A	Main breaker: 150, 200, 225, 300, 400 A
Main lugs: 40, 70, 125, 150, 200, 225, 400 A	Main lugs: 125, 150, 200, 225, 400 A

Convertible Loadcenters

Main breaker or main lugs: single-phase up to 225 A

Branch Breakers

Type CH: 10–150 A. Single-, two- and three-pole. Selected amperages available in shunt trip, HACR and switching duty	Type CH-AFCI arc fault circuit interrupter
Ground fault circuit interruptors: 15–60 A	Type CHP: 10–125 A. Single-, two- and three-pole. three-position commercial trip
Type CH-HID: 15–30 A. Single-, two- and three-pole	Selected amperages available in HACR switching duty
CH-HM high magnetic	Type CHP-HID: 15–30 A. Single-, two- and three-pole
CH-M50 high ambient	Type CHP-GFCI: 15–30 A. Single-pole ground fault breakers

Enclosures

NEMA® Type 1 indoor	NEMA Type 3R outdoor
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Loadcenter and Breaker Accessories

Branch circuit breaker:	Complete line of ground bar kits 5, 10, 14 and 21 circuits, some with additional #2/0 lugs
Auxiliary components	Each terminal will accommodate: (3) #14–#10 Cu/Al or (1) #14–#4 Cu/Al
Hold-down kits	Sub-feed lugs 125, 150 A—two- and three-pole
Handle ties	Shunt trips
Lockoffs	Universal rainproof conduit hubs Group One: 3/4, 1, 1-1/4, 1-1/2, 2 inches (19.1, 25.4, 31.8, 38.1, 50.8 mm)
Lockdogs	Group Two: 2, 2-1/2, 3 inches (50.8, 63.5, 76.2 mm)
	Adapter plate

Bussing

Silver flash plated copper bus is a standard feature

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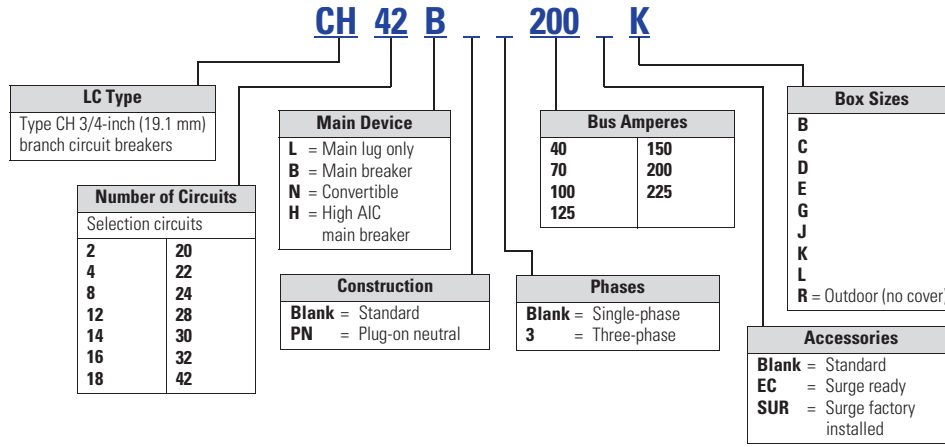
Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

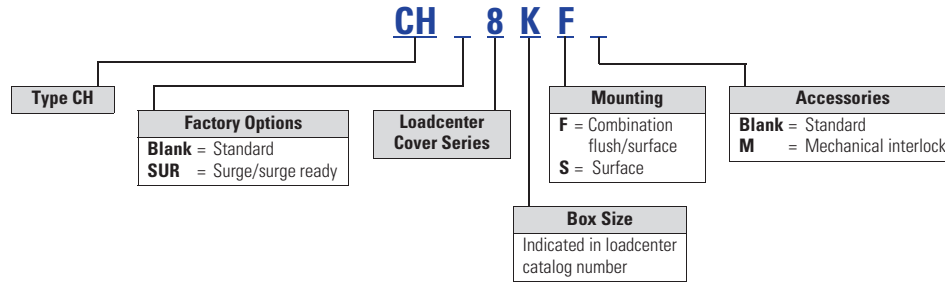
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Catalog Number Selection

Loadcenters 100–225 A and 12–42 Circuits



Indoor Covers Ordered Separately



Note: All combinations are not valid, refer to the catalog section.

Technical Data and Specifications

General

- A. The Contractor shall furnish and install loadcenters incorporating circuit breakers of the number, rating and type as specified herein and as shown on the contract drawings.
- B. The loadcenter and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL and NEMA including:
 1. UL 67—standards for panelboards
 2. UL 50—standards for cabinets and boxes
 3. UL 489—standards for molded case circuit breakers
 4. Federal Spec Classification W-C 375
 5. UL 1699—all fault interrupting

Qualifications

- A. The manufacturer of the loadcenter shall be the manufacturer of the circuit breaker within the load center. All breakers shall be full size.
- B. For the equipment specified herein, the manufacturer shall be ISO® 9000 certified.
- C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of seven (7) years.

Manufacturers

- A. Eaton

Ratings

- A. Loadcenters shall be rated for 240 Vac and shall have short-circuit ratings as shown on the drawings or as herein scheduled, but not less than 10,000 amperes rms symmetrical.
- B. Breakers shall be full size and a minimum of 125 A frame. Breakers 10–125 A trip size shall take up the same pole spacing.
- C. Loadcenters shall be labeled with a UL short-circuit rating. When series ratings are applied with integral or remote devices, a label shall be provided. Series ratings shall cover all trip ratings of installed frames. It shall state the conditions of the UL series ratings including:
 1. Size and type of upstream device.
 2. Branch devices that can be used.
 3. UL series short-circuit rating.

Construction

- A. All interiors, with the exception of the branch circuit breakers shall be completely factory assembled with main breakers, main lugs or no main device.
- B. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.
- C. Physical means must be provided to prevent the installation of more overcurrent devices than that number for which the enclosure was designed. Full size breakers are required.

Bus

- A. Busbars for the main and cross connectors shall be of silver flash plated copper construction in accordance with UL standards. Bussing shall be braced to 65 kAIC.
- B. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection of same ampacity as branch.

Wiring/Termination

- A. All wire connectors and terminals shall be of the anti-turn solderless type and suitable for copper or aluminum wire of the sizes indicated. All connectors shall meet the “Requirements for Wire Connectors and Soldering Lugs” UL 486B.
- B. All loadcenters where marked shall be suitable for use with 60/75 °C rated wire.

Circuit Breakers

- A. Circuit breakers shall be molded case type, 3/4-inch (19.1 mm) wide per pole. Multipole circuit breakers shall be of a stack pole design to provide electrical phase isolation and have an internal common trip.
- B. Each pole of the circuit breaker will have inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors. Circuit breakers shall be quick-make/quick-break.
- C. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. Breakers shall be calibrated after assembly.

- D. All circuit breakers shall be operated by a toggle-type handle and multipole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide good visual trip indication.
- E. Contacts shall be of non-welding silver alloy.
- F. All branch breaker handles shall be of a different color than the case of the breaker.
- G. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60 °C or 75 °C wire.
- H. Breakers shall be SWD rated and/or HACR rated as required.
- I. Arc fault interrupting circuit breakers, (AFC), shall be provided on all 15 and 20 A single-phase 120/240 Vac circuits except those indicated as remote controlled breakers. AFI breakers shall be “Classified for mitigating the effects of arcing faults,” or conforming to UL Standard 1699 and as defined by per Article 210.12 Section A of the NEC Code.

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Loadcenters and Circuit Breakers

Type CH Loadcenters and Circuit Breakers

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Product Selection

10 kAIC, 120 Vac, 120/240 Vac and 240 Vac

Type CH Plug-On Circuit Breakers





Type CH Breakers, 3/4-Inch (19.1 mm) per Pole 120, 120/240 or 240 Vac, 10 kAIC

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Catalog Number		
		Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton	Three-Pole 240 Vac Common Trip Requires Three 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton
10	(1) #14-8 ①	 CH110	 CH210	 CH310
15	(2) #14-10 ①② (1) #14-6 ③	CH115 ⑦⑧	CH215 ⑧	CH315 ⑧
20		CH120 ⑦⑧	CH220 ⑧	CH320 ⑧
25		CH125 ⑧	CH225 ⑧	CH325 ⑧
30		CH130 ⑧	CH230 ⑧	CH330 ⑧
35	#14-2 ① #14-6 ③	CH135 ⑧	CH235 ⑧	CH335 ⑧
40	#10-1/0 ④	CH140 ⑧	CH240 ⑧	CH340 ⑧
45	#14-2 ⑤ #3/0 ⑥	CH145 ⑧	CH245 ⑧	CH345 ⑧
50		CH150 ⑧	CH250 ⑧	CH350 ⑧
60		CH160	CH260	CH360
70		CH170	CH270	CH370
80		—	CH280	CH3080
90		—	CH290	CH3090
100		—	CH2100	CH3100
110		—	CH2110	—
125		—	CH2125	—

Type CH Plug-On Circuit Breakers



CHF Breakers with Mechanical Trip Flag

Ampere Rating	Wire Size Range Cu/Al 60 °C or 75 °C	Catalog Number	
		Single-Pole 120/240 Vac Requires One 3/4-Inch (19.1 mm) Space 10 per Shelf Carton	Two-Pole 120/240 Vac Common Trip Requires Two 3/4-Inch (19.1 mm) Spaces 5 per Shelf Carton
10	(1) #14-8 ①	 CHF110	 CHF210
15	(2) #14-10 ①②	CHF115 ⑦⑧	CHF215 ⑧
20		CHF120 ⑦⑧	CHF220 ⑧
25		CHF125 ⑧	CHF225 ⑧
30		CHF130 ⑧	CHF230 ⑧
35	#14-2 ①	CHF135 ⑧	CHF235 ⑧
40	#10-1/0 ④	CHF140 ⑧	CHF240 ⑧
45	#14-2 ⑤	CHF145 ⑧	CHF245 ⑧
50		CHF150 ⑧	CHF250 ⑧

Notes

- ① For single- and two-pole breakers.
- ② Solid and stranded wire can be used together.
- ③ For three-pole breakers.
- ④ Single-pole 60-70 A, two-pole 80-125 A, three-pole 40-100 A.
- ⑤ Single-pole 40-50 A, two-pole 40-70 A.
- ⑥ Two-pole 150 A.
- ⑦ Switching duty rated.
- ⑧ HACR rated.

For factory-installed options, refer to **Page V1-T1-39**.